1.   A method of optimizing a laser-assisted direct metal deposition process wherein material added to a melt pool is solidified to fabricated an object according to a description thereof, the comprising the steps of:

creating a database including acceptable direct metal deposition process parameters based upon previously obtained empirical data;

measuring one or more dimensions of the melt pool;

monitoring the accumulation of residual stress of the object; and

referring to the description of the object to determine if the object is being fabricated in accordance with the description and, if so;

referring to the database to determine if the process parameters are within acceptable limits and if not;

implementing a corrective measure.

2.   The method of claim 1, wherein the process parameter is the accumulation of stress within the object.

3.   The method of claim 2, wherein the corrective measure is to modify the contour path of the laser.

4.   The method of claim 2, wherein the corrective measure is to modify the mass flow of the powder.

5. The method of claim 2, wherein the corrective measure is to modify the speed of the deposition.

6. The method of claim 1, wherein the residual stress of the object is monitored through sub-harmonic vibration.

7. The method of claim 1, wherein the process parameter is the temperature of the melt pool.

8. The method of claim 7, wherein the corrective measure is to modify the power delivered to the laser.

9. The method of claim 1, wherein one or more dimensions of the melt pool are measured by monitoring the light received at the pixels of an optical detector.

10. The method of claim 1, wherein the database includes a look-up table.

11. A system for optimizing a laser-assisted direct metal deposition process wherein an object is fabricated in accordance with a description thereof, the system comprising:

a controllably moveable deposition head including a laser operative to form a melt pool on the surface of the object and a supply of powder feeding the melt pool to be

solidified as the deposition head is traversed;

a database including acceptable direct metal deposition process parameters based upon previously obtained empirical data;

a first sensor for detecting one or more dimensions of the melt pool;

a second sensor the sensing the accumulation of residual stress of the object; and

a controller interfaced to the laser, deposition head movement control, database and first and second sensors, the controller being operative to perform the following functions:

refer to the description of the object to determine if the object is being fabricated in accordance with the description and, if so;

refer to the database to determine if the process parameters are within acceptable limits and if not;

implement a corrective measure.

12.   The system of claim 11, wherein the process parameter is the accumulation of stress within the object.

13.   The system of claim 12, wherein the corrective measure is to modify the contour path of the laser.

14.   The system of claim 12, wherein the corrective measure is to modify the mass flow of the powder.

15.   The system of claim 12, wherein the corrective measure is to modify the speed of the deposition.

16.   The system of claim 12, wherein the first sensor is a sub-harmonic vibration sensor.

17.   The system of claim 11, wherein temperature sensor.

18.   The system of claim 17, wherein the corrective measure is to modify the power delivered to the laser.

19.   The system of claim 11, wherein the second sensor is a one- or two-dimensional pixelized image sensor.

20.   The system of claim 11, further including multiple deposition heads.